

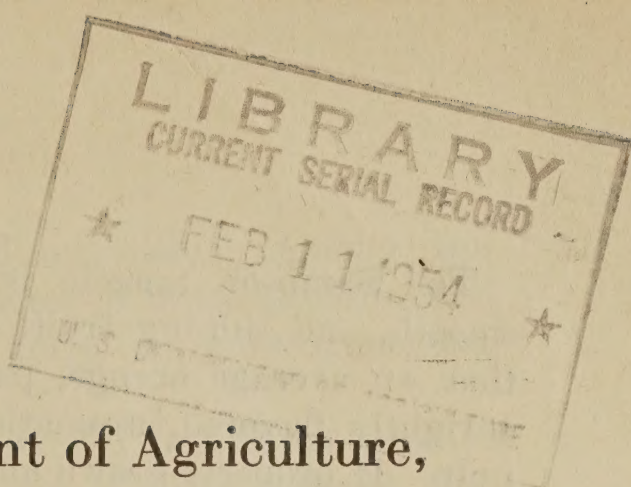
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## United States Department of Agriculture,

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### TANGELOS: WHAT THEY ARE. THE VALUE IN FLORIDA OF THE SAMPSON AND THORNTON TANGELOS.

For a number of years the Department of Agriculture has been testing a large number of crosses between different varieties of citrus fruits, one of these crosses (between the tangerine orange and the grapefruit) producing a new type of fruit, which has been named the tangelo. As a class, these fruits resemble round oranges more than either of their parents and are exceedingly variable, sister fruits from seeds of a single cross-pollinated fruit often being very unlike. Second-generation seedlings, however, reproduce the parent variety almost as closely as though grown from a bud of the parent tree.

Two well-recognized varieties of these fruits have been thoroughly tested and for a number of years past have been distributed to co-operators for further trial. These tangelos are called the Sampson and the Thornton. They have been grown in a small way only and, until recently, chiefly for home use. Failure to appreciate their proper stage of maturity has served to disappoint many who have experimented with this new type of fruit. When eaten before fully ripe the fruit is disappointing, the flavor being disagreeably acid. It colors up early and externally appears mature long before it is really ready for consumption.

The Sampson tangelo is, under normal conditions, a decidedly late fruit, maturing in Florida about the time of the Tardiff orange, through March, April, and May. The Thornton is considerably earlier, the time of ripening, however, seeming to vary in different sections, though it usually is not mature before January or February. Some trees, however, have lately come to notice, the fruit of which is distinctly early, ripening in November and December.

As commercial plantings are being made at several places in Florida it is important that citrus growers should have a clear understanding of the characteristics of the two types now available.



The Sampson tangelo is a slightly pear-shaped, thin-skinned, smooth, and shining fruit, of variable size, though usually larger than an average orange, pale orange in color, with a rather acid sprightly flavored, aromatic, soft and juicy, deep orange-colored pulp. If properly grown and picked when fully mature, it is a delicious fruit. It is liable, however, to dry out on one side before fully ripening, a fault assumed to be due to sun scald. This tendency will probably preclude its culture on an extensive scale except by experts for a special market. It has in some cases been necessary to throw away as culls a large percentage of the crop of this variety, even in the regions where it grows best. There is some evidence going to show that the tendency of the fruit to sun scald is less pronounced in occasional trees. Care should be taken to secure bud wood from such trees for further propagation.

The Thornton tangelo is of a very different type—a rather rough, thick-skinned fruit of good size, with light or very pale orange-colored juice and sprightly flavored pulp. It has little acidity and resembles a tender good-flavored orange more than a grapefruit or tangerine. When fully ripe it is so tender that extra care may be necessary in packing it for shipment. In this regard and in its rather free rind it resembles the tangerine. It may be eaten out of hand, like a tangerine, but is doubtless better when halved and eaten like a grapefruit. It requires no sugar, and the pulp is so tender it can be removed with a spoon without cutting the segments; moreover, there is little or no tendency for the juice to squirt when the spoon is inserted in the segment. While the Thornton fruit is not as attractive in appearance as the Sampson, it is milder in flavor and by some is preferred on this account. The fruit of both sorts should receive thorough spraying to produce clean, bright tangelos. Citrus scab is especially disfiguring on the Sampson tangelo, which seems to be rather susceptible to this disease. All foliage affected with scab should be carefully pruned away.

An early-maturing tangelo of good quality is desirable to furnish a supply throughout the shipping season and in some locations to avoid the danger of freezing before maturity. Buds from the early Thornton trees referred to above will be thoroughly tested in different localities to see if this tendency is inherent or due to local conditions. With the large number of similar hybrids still to be fruited, there is little doubt that desirable fruits will be obtained, ripening throughout the whole season, from November to July.

The success of these first two hybrids, using the tangerine and grapefruit as parents, has led to the creation of hundreds of additional hybrids between all the Mandarin types of oranges, including several varieties of tangerines, the King and Satsuma oranges,



and the better types of grapefruit and pummelo. Among the tangelos resulting from such crosses are some of much promise, but further testing is necessary before any of these can be recommended for general planting.

For the canker-infested portions of the Gulf Coast States west of Florida there is reason to believe that some of these tangelos will be found of marked canker resistance. These will serve as substitutes for the very susceptible grapefruit largely grown for home use in this region. Tests now being made at the College of Agriculture, Los Banos, Philippine Islands, using a large number of tangelos supplied from material under test in this country, show a wide range of susceptibility, some of the tangelos being apparently canker resistant.

The fact that the Natsu-mikan, a fruit similar to a tangelo and possibly a spontaneous hybrid of an orange of the Mandarin type with a Japanese pummelo, seems to be decidedly canker resistant, both in Japan and in this country, confirms the belief that canker-resistant tangelos may be with reason expected from Mandarin-pummelo crosses, especially when one or, preferably, both of the parents are canker resistant, as would be the case with a cross between the Satsuma orange and the Hirado pummelo.

Hybrids between canker-resistant pummelos and other citrus fruits were made in Japan in 1915 and subsequent years through the co-operation of several of the imperial and provincial agricultural experiment stations. The resulting crosses are being tested for canker resistance, both in Japan and in the Philippine Islands.

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